



NOTES

HYPERVITAMINOSIS

GENERALLY, WHAT IS IT?

PATHOLOGY & CAUSES

- Toxic effects due to increased ingestion/ storage of vitamins, most often fat soluble vitamins (vitamins A, D, E, K)
 - Fat-soluble vitamins stored in fatty tissues, liver; remain in body for longer periods of time than water-soluble vitamins

RISK FACTORS

- Increased ingestion of vitamin supplements/food containing high levels of vitamins

DIAGNOSIS

- See individual disorders

TREATMENT

OTHER INTERVENTIONS

- Discontinue consumption of vitamin supplements/food containing high levels of vitamins

EXCESS VITAMIN A

osms.it/excess-vitamin-a

PATHOLOGY & CAUSES

- Condition caused by excessive amounts of vitamin A in body
- Acute toxicity
 - Occurs in adults when > 200,000mcg (> 660,000IU) consumed in single dose
 - Occurs in infants < six months when > 6,000mcg (> 20,000IU) consumed < one month
- Chronic toxicity
 - Long-term ingestion of high doses of vitamin A

CAUSES

- Most likely by increased ingestion of synthetic "preformed" vitamin A, approximately 10 times the Recommended

Dietary Allowance (RDA)

- Proforms of vitamin A (e.g. carotenoids) generally not toxic
- Teratogenic effects
 - Effects on fetus during first trimester of pregnancy

SIGNS & SYMPTOMS

- May compromise bone metabolism, health
- Acute toxicity
 - Nausea, vomiting, blurry vision
 - In extremely high doses: drowsiness, vomiting
- Chronic toxicity
 - Ataxia, hair loss, bone/muscle pains, vision changes, liver damage, dry skin,

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nausea, headache, **hepatomegaly**, increased risk of osteoporotic fractures

- **Teratogenic** effects
 - Can cause spontaneous fetal death, **facial/cardiac malformations** (e.g. microcephaly)

DIAGNOSIS

DIAGNOSTIC IMAGING

Bone X-rays

- Weakness/damage

LAB RESULTS

- Most vitamin A stored in liver, circulating concentrations not always accurate indicator

- **Liver function tests (LFTs)**: mild elevation of liver enzymes

- **Liver biopsy**: enlarged hepatocytes, increased fibrosis in chronic hypervitaminosis A

TREATMENT

OTHER INTERVENTIONS

- Discontinue consumption of vitamin A supplements/foods containing high levels of vitamin A, esp. containing natural vitamin A (e.g. kidney, liver, egg yolks)

EXCESS VITAMIN D

osms.it/excess-vitamin-d

PATHOLOGY & CAUSES

- Toxicity caused by excessive amounts of vitamin D
 - Vitamin D increases circulating levels of calcium
 - Most often caused by excessive intake
- Maximum tolerable intake 100mg for children > nine years old, adults, pregnant/lactating individuals; lower for younger children
- Main consequence is **hypercalcemia**

- Chronic intoxication
 - Bone demineralization, pain; nephrocalcinosis; kidney damage

DIAGNOSIS

LAB RESULTS

- Serum concentration of 25(OH)D > 150ng/mL (374nmol/L)

TREATMENT

OTHER INTERVENTIONS

- Discontinue consumption of vitamin D supplements; restrict dietary intake of calcium, dairy products (milk, cheese, yogurt), almonds

SIGNS & SYMPTOMS

- Acute intoxication (often due to **hypercalcemia**)
 - **Confusion**, excessive thirst, nausea, vomiting